

FIGURE 1 PRIOR ART

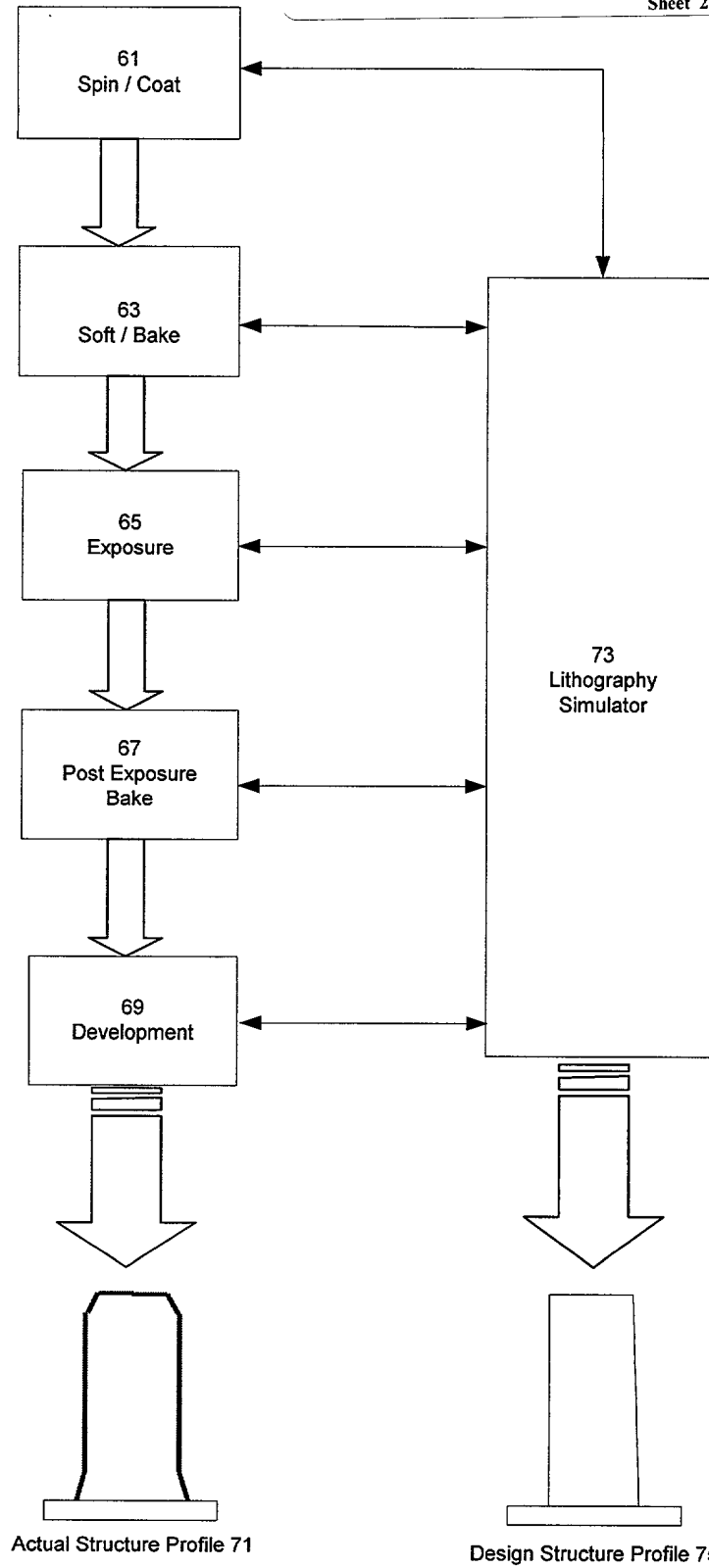


FIGURE 2 PRIOR ART

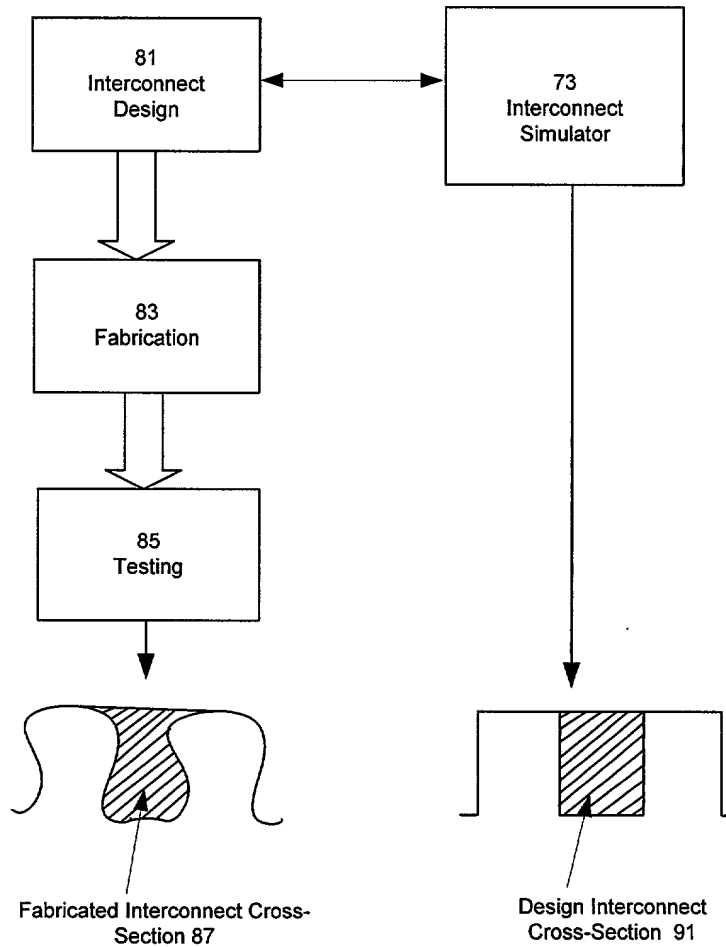


FIGURE 3 PRIOR ART

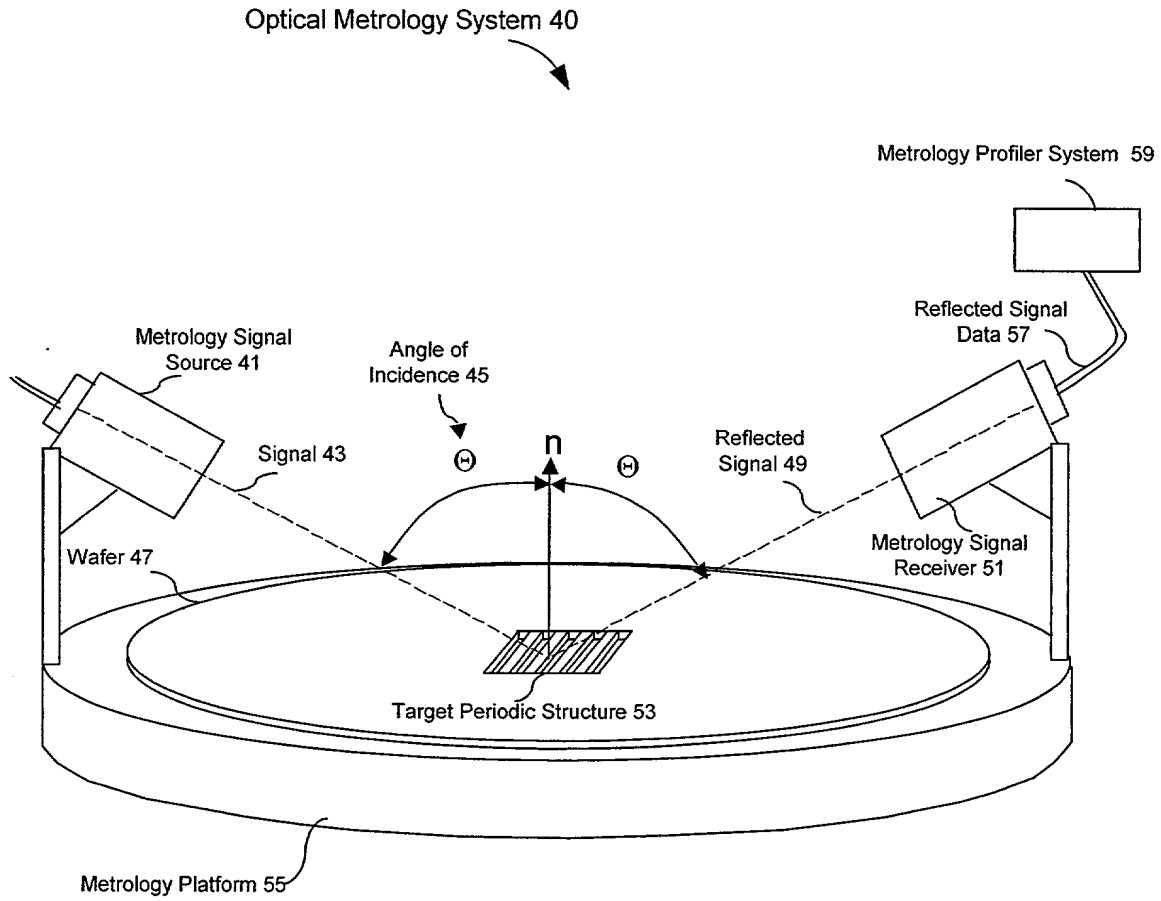


FIGURE 4

Profile-Based Creation of  
Simulation Data Store 100

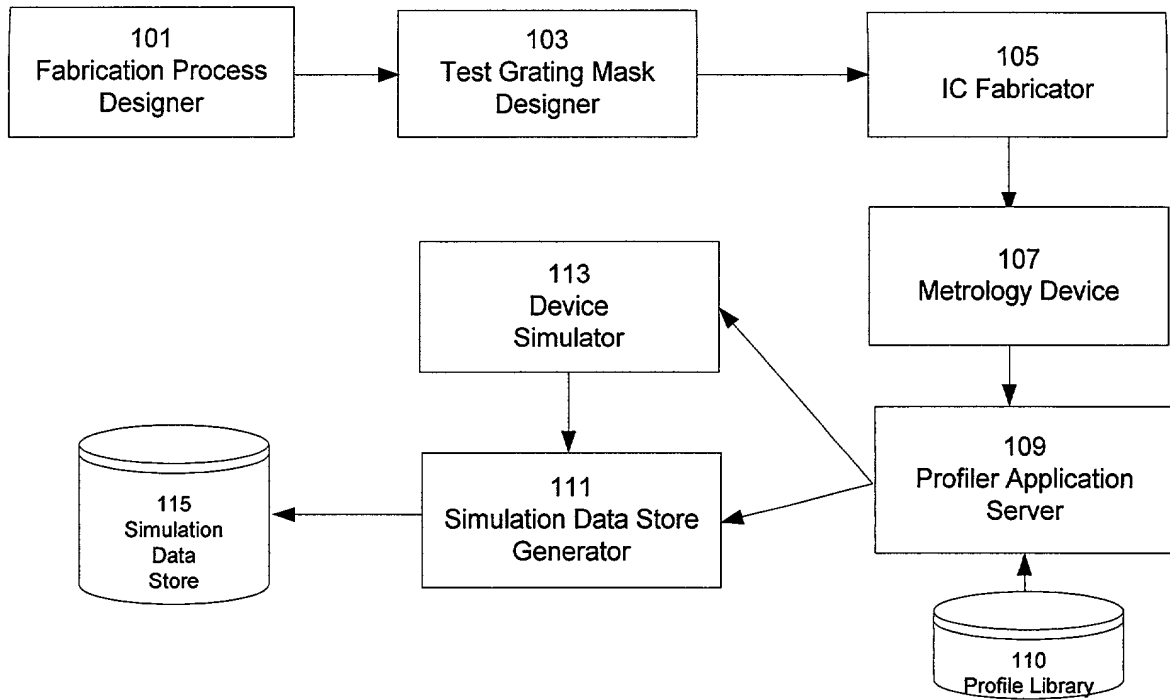


FIGURE 5A

Profile-Based Creation of  
Interconnect Simulation  
Data Store 120

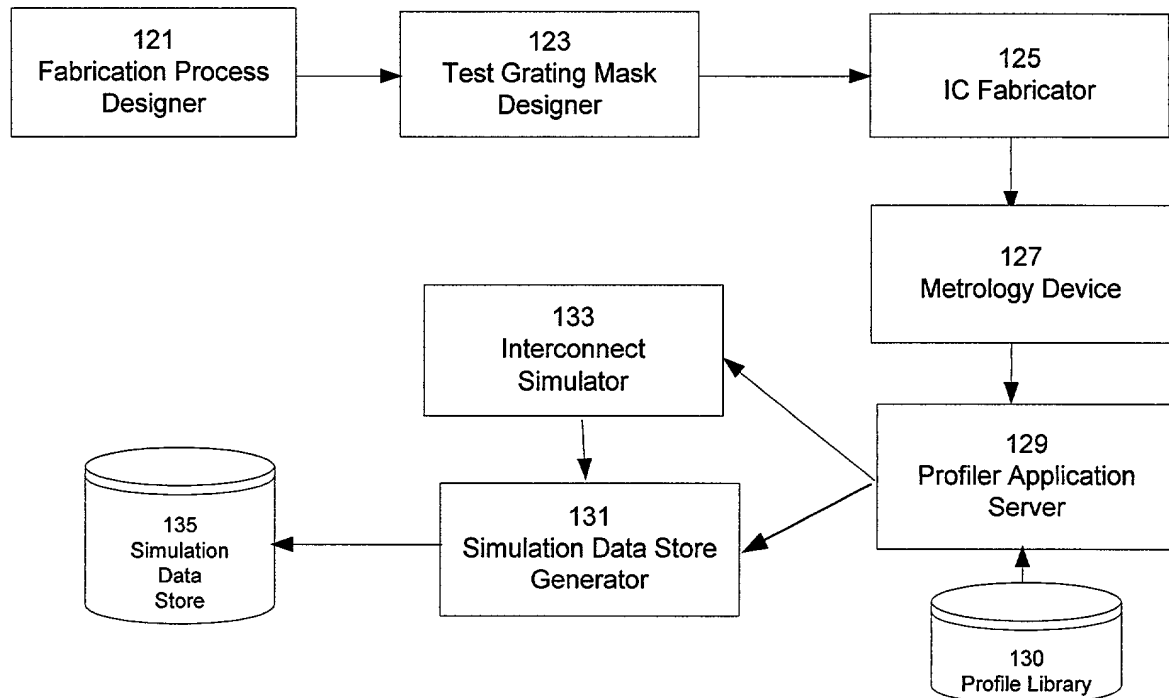
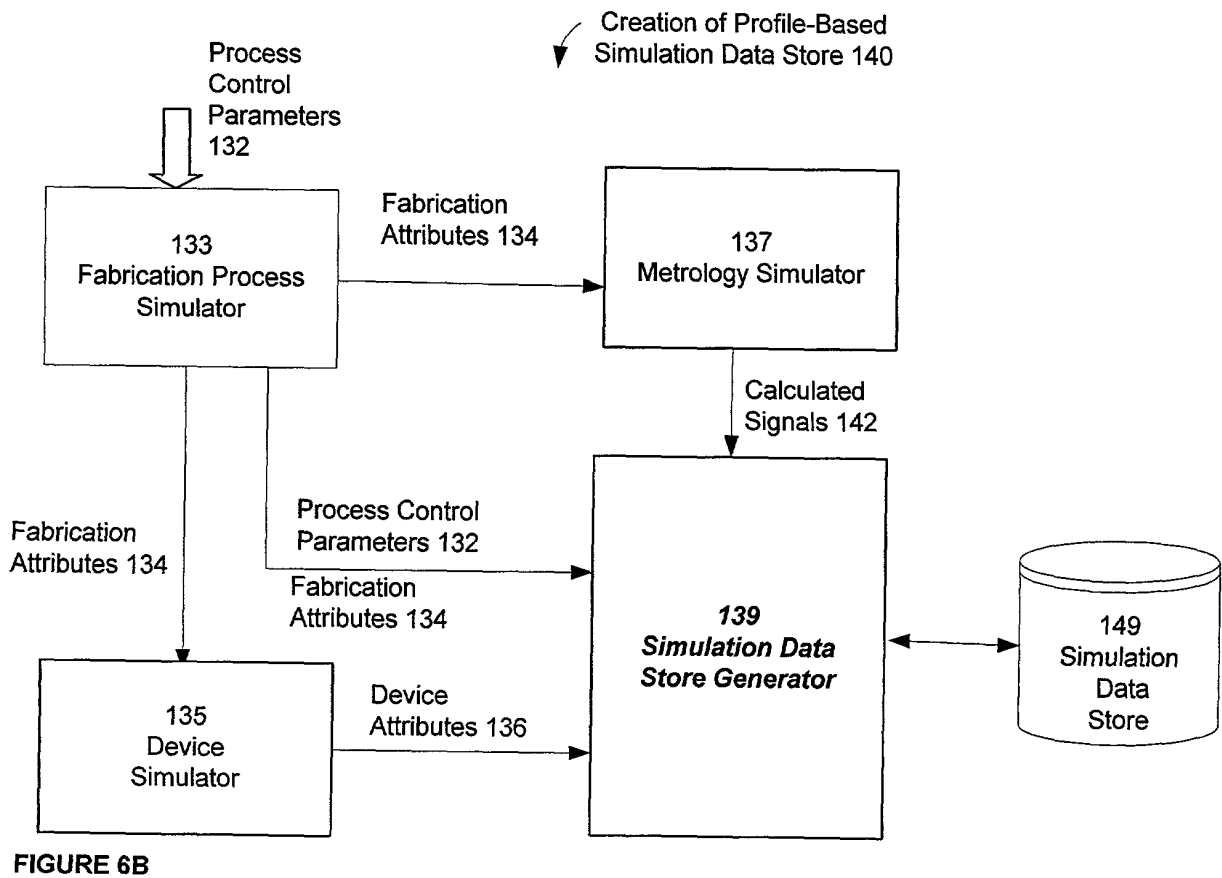
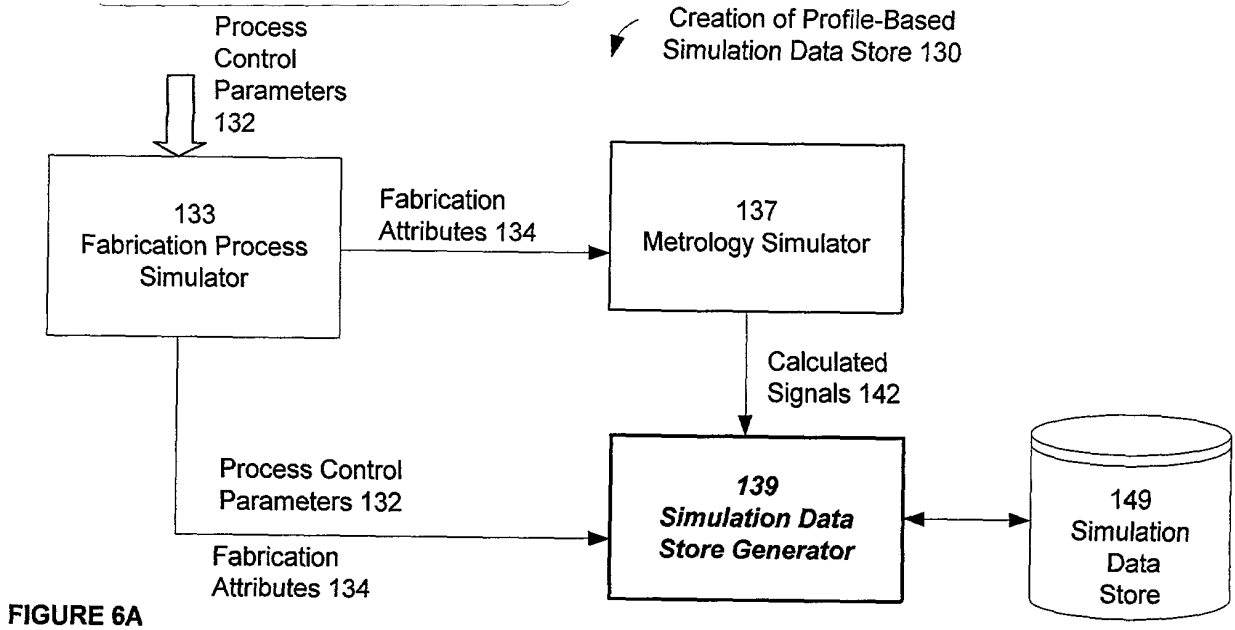


FIGURE 5B



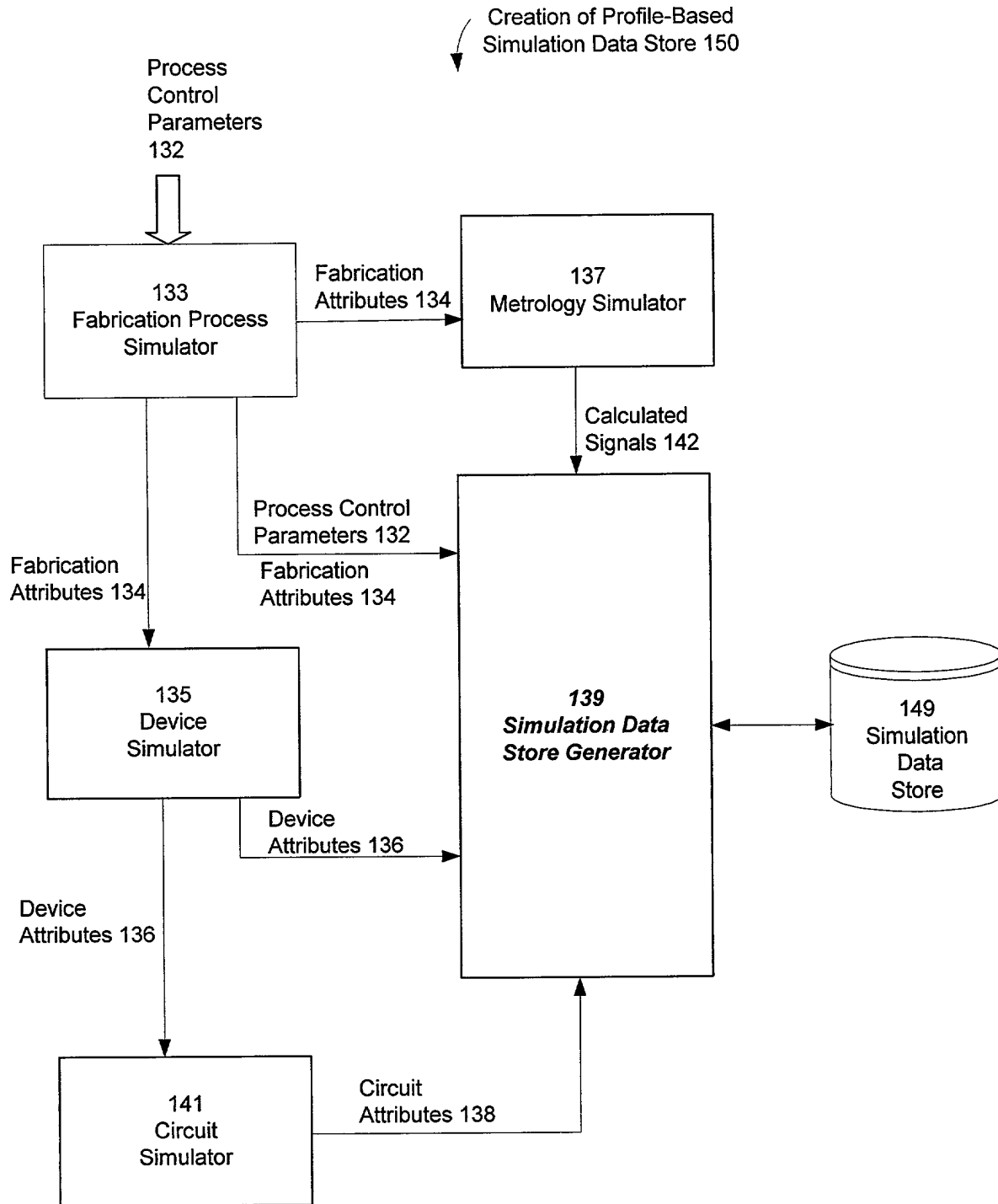


FIGURE 6C

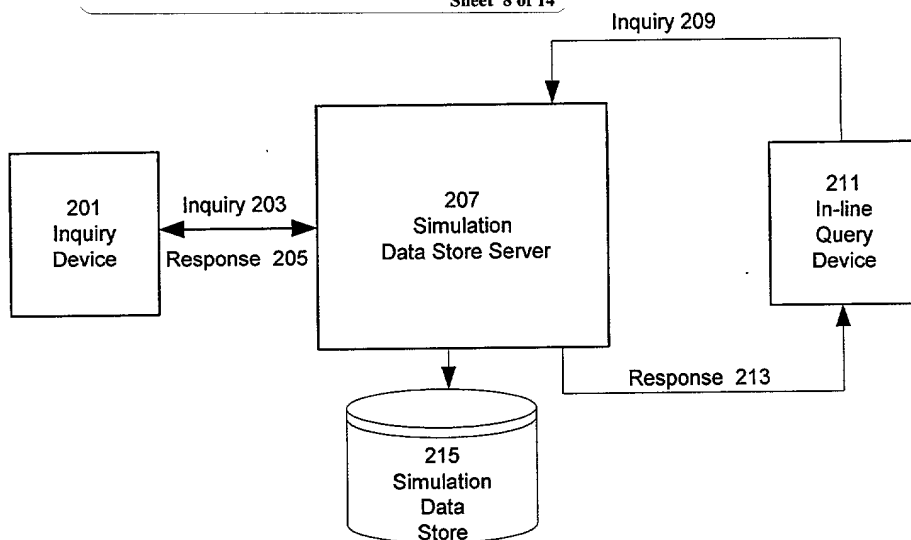


FIGURE 7A

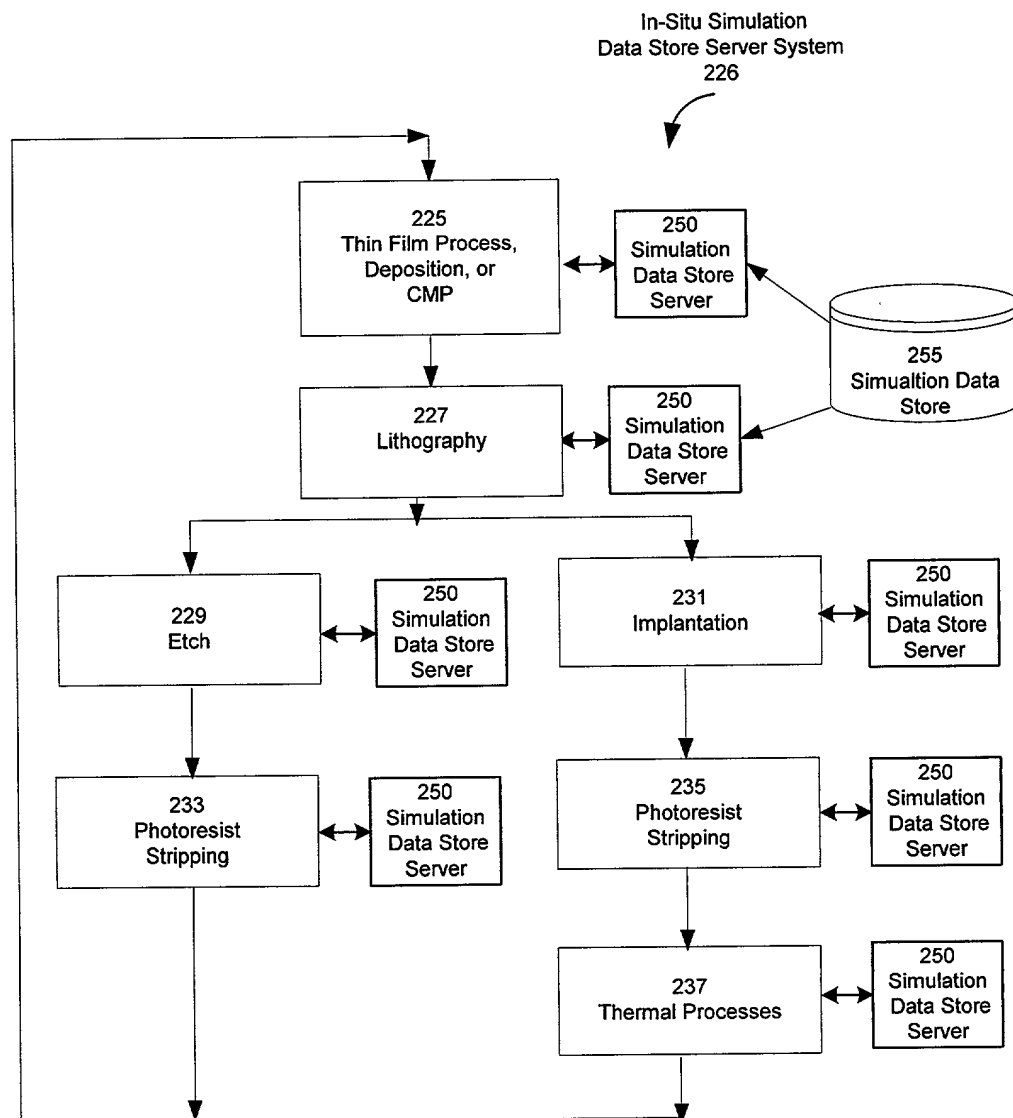


FIGURE 7B



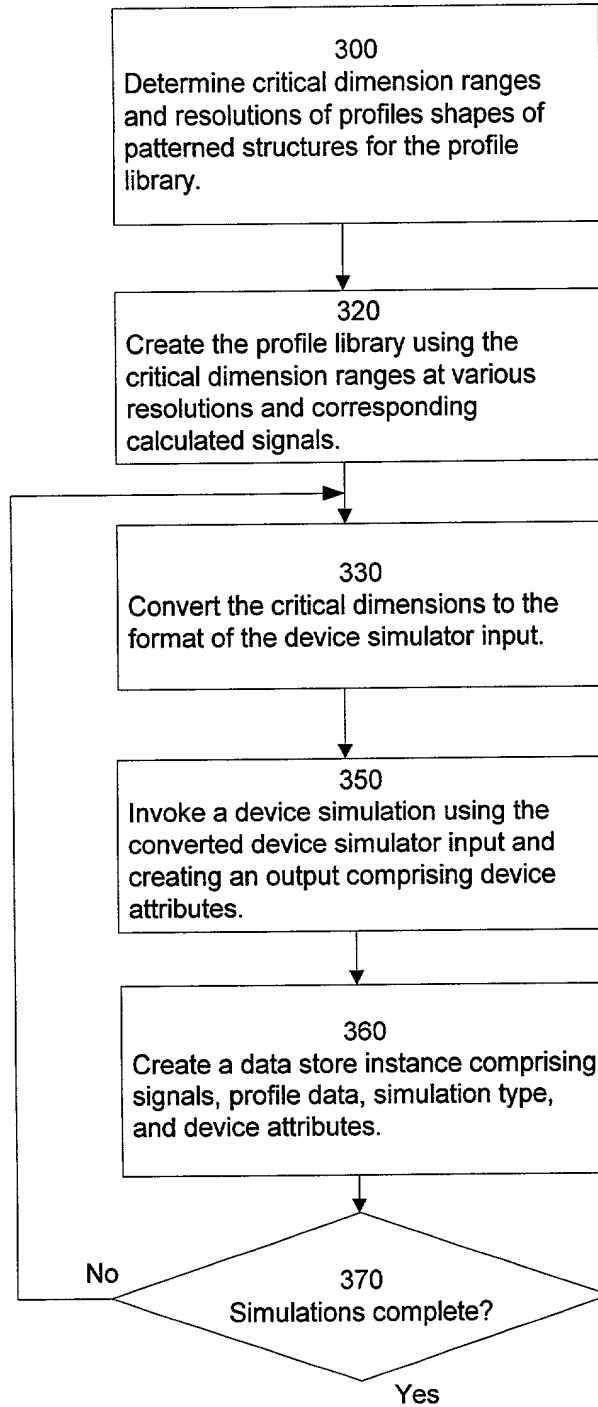


FIGURE 8A

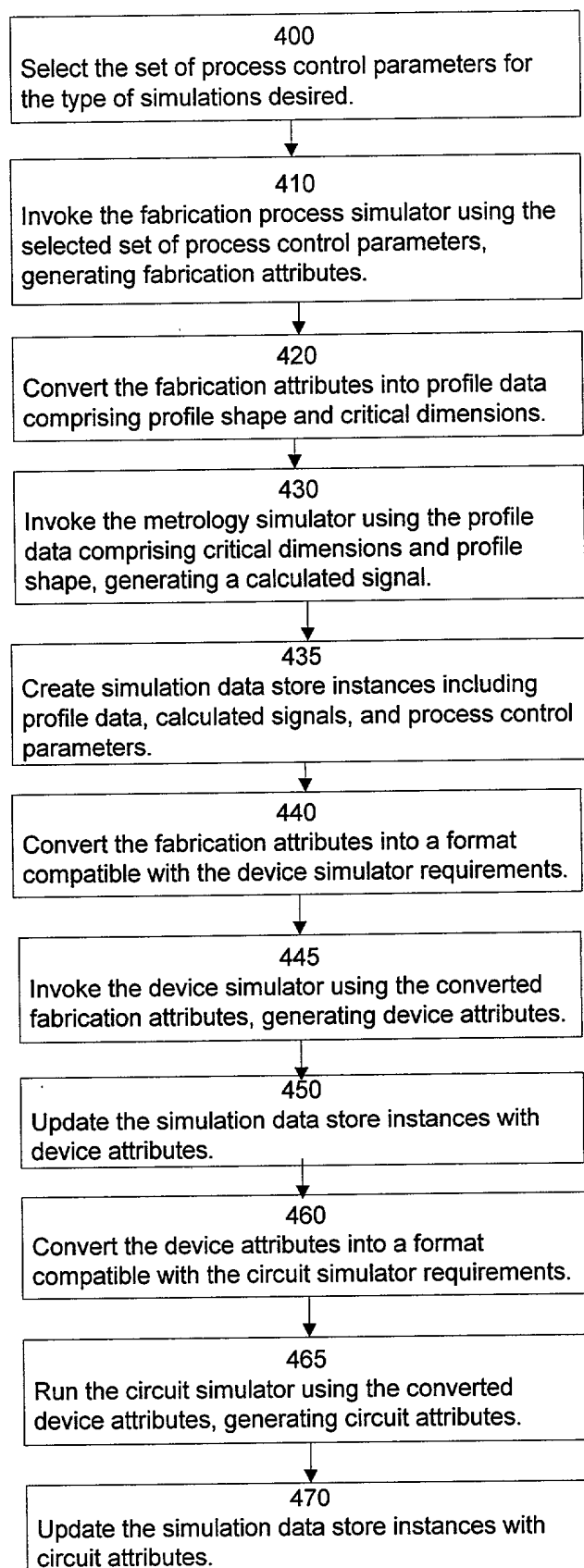


FIGURE 8B

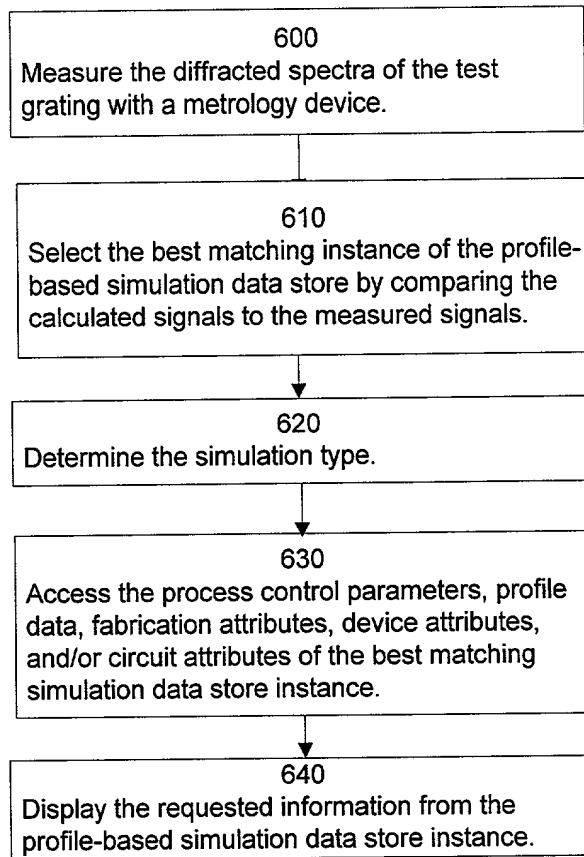


FIGURE 9A

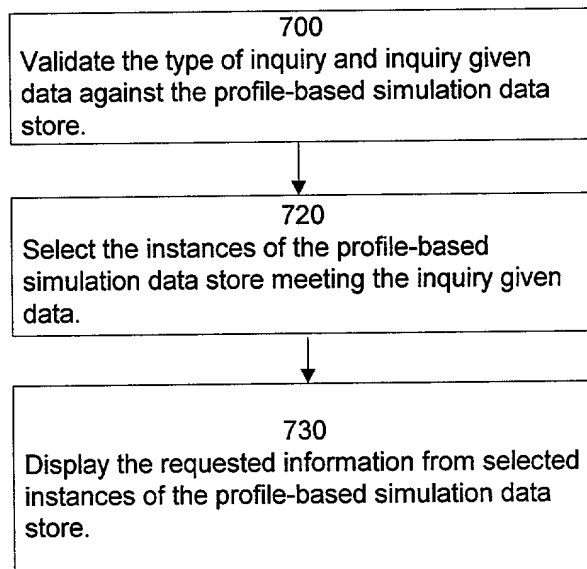


FIGURE 9B

# Simulation Data Store Format 800

801 Signal	803 Profile Data	804 Simulation Data Segment		
		805 Simulation Type	807 Process Control Parameters or Input Parameters	809 Fabrication, Device and/or Circuit Attributes

where the Simulation Data Segment comprising Simulation Type, and Process Control Parameters or Input Parameters, and Fabrication, Device, and/or Circuit Attributes occurs n number of times and where Simulation Type may be:

## Fabrication Process Simulation:

Lithography Simulation	Diffusion Simulation
Implantation Simulation	Deposition and Etching Simulation
Oxidation Simulation	Deposition and Reflow Simulation
CMP Simulation	3- Dimensional Fabrication Simulation.
2- Dimensional Process Simulation	
Other Fabrication Process Simulation.	

## Device Simulation

Interconnect Simulation	Power Device Simulation
Electrostatic Discharge Simulation	Compound Device Simulation
Optical Device Simulation	Other Device Simulation

## Circuit Simulation

Transient Simulation	Noise Simulation
Signal Integrity Simulation	Other Circuit Simulation

Combined Fabrication Process & Device Simulation

Combined Device & Circuit Simulation

Combined Fabrication Process, Device & Circuit Simulation

FIGURE 10

### Example 1: Interconnect Device Simulation

801 -Signal: Values representing Tan ( $\Psi$ ) and Cos ( $\Delta$ ) for a periodic structure diffracted spectra

803 - Profile Data:

Top Critical Dimension (CD), nanometers (nm)

Bottom CD, nm

Height, nm

Trapezoidal Profile with Footing

804 - Simulation Data Segment

805 - Simulation Type: Interconnect Device Simulation

807 - Input Parameters:

Profile Data

Other Device Simulation Input Parameters

809 - Device Attributes

Capacitance, farads

Inductance, henrys

Resistance, ohms

Other Electrical & Thermal Device Attributes

### Example 2: Fabrication Process & Device Simulation

801 -Signal: Values representing Tan ( $\Psi$ ) and Cos ( $\Delta$ ) for a periodic structure diffracted spectra

803 - Profile Data:

Top critical dimension (CD), nanometers (nm)

Bottom CD, nm

Height, nm

Trapezoidal profile with footing

804 - Simulation Data Segment 1

805 - Simulation Type: Lithography & Etch Simulation

807 - Input Parameters:

Numerical aperture

Focus

Post Exposure Bake Temperature

Exposure

Anti-Reflective Coating Thickness

Resist Thickness

Exposure Time

Other Fabrication Process Control Parameters

809 - Fabrication Process Attributes

Profile Data

Other Fabrication Process Attributes

804 - Simulation Data Segment 2

805 - Simulation Type: Interconnect Device Simulation

807 - Input Parameters:

Profile Data

Other Device Simulation Input Parameters

809 - Device Attributes

Capacitance, farads

Inductance, henrys

Resistance, ohms

Other Electrical & Thermal Device Attributes

FIGURE 10 Continued

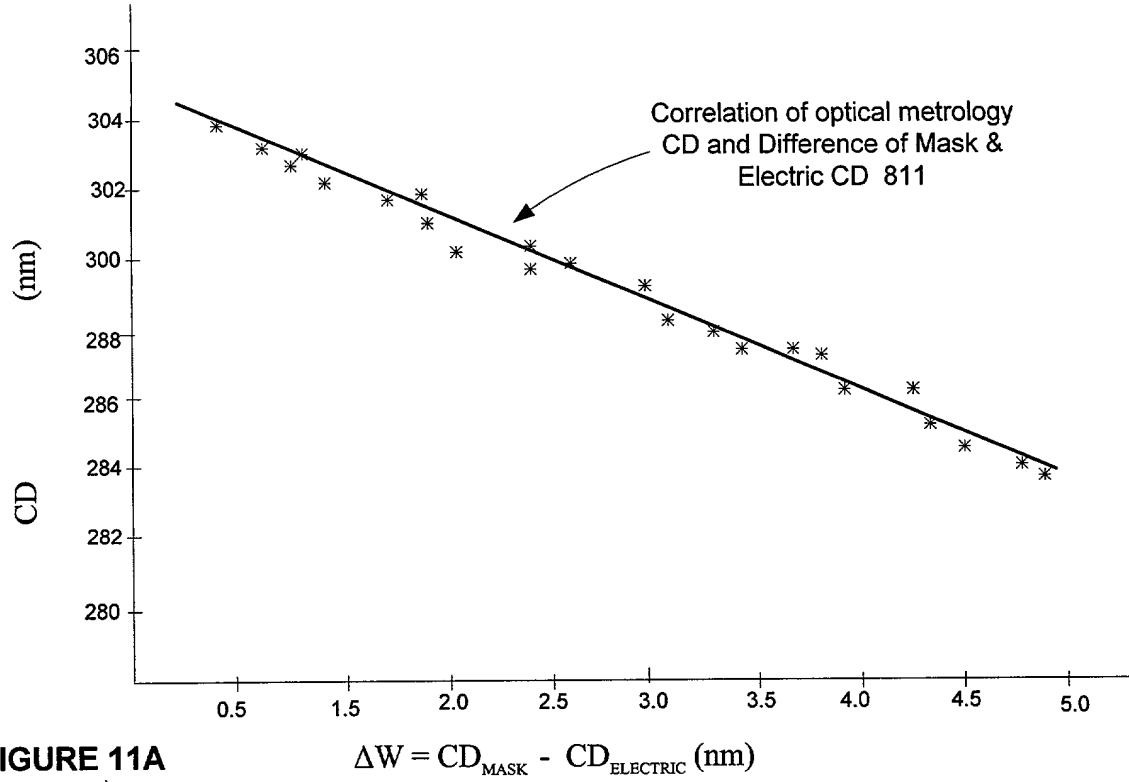


FIGURE 11A

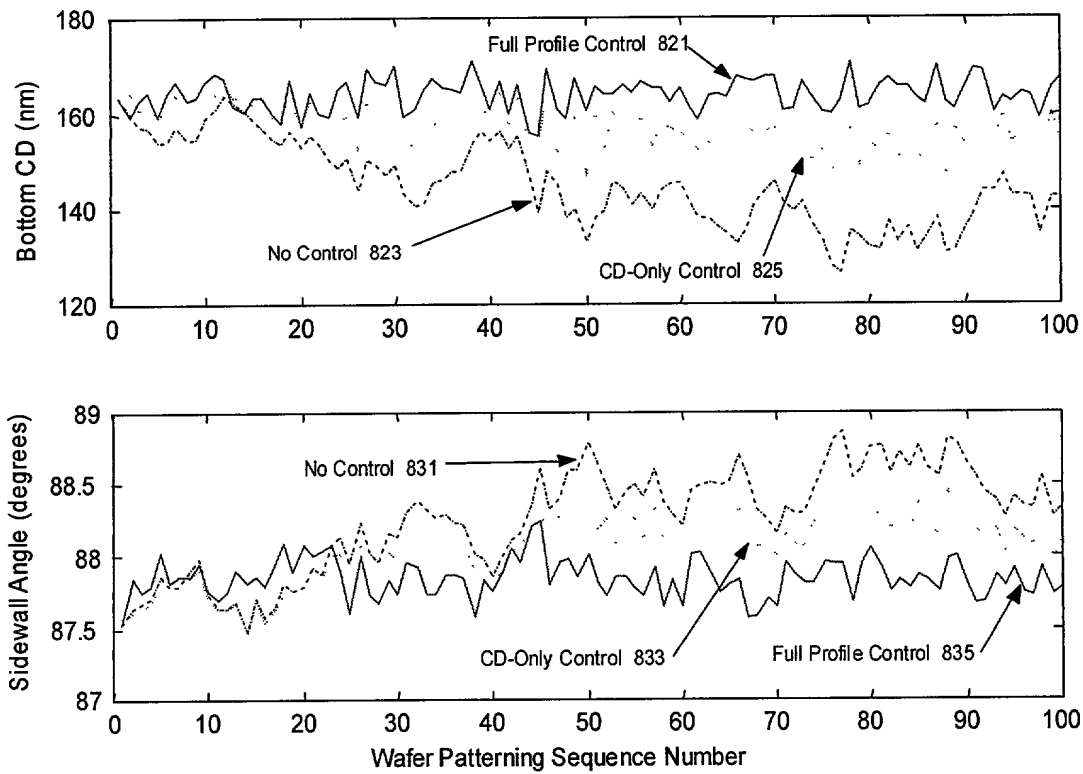


FIGURE 11B